



Elevator performance and duty application guideline



synergy 100

synergy 100 is the low-duty elevator suitable for passenger transportation in low-rise buildings within the functional residential market.

According to the load (from 450 to 1,000 kg), travel height (up to 45 m) and the speed requirements (1.0 m/s), it features different sizes of the PMC 125 machine family.

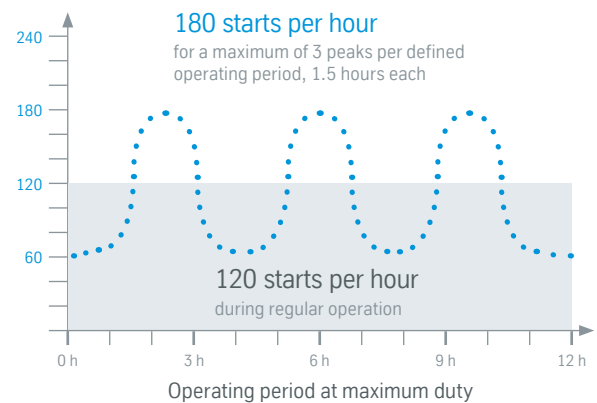
Performance (standard PMC 125 machine):

Within the standard configuration and along with the PMC 125 machine, the synergy system is designed to operate at 120 starts per hour (40% duty cycle) and is capable of performing 180 starts per hour (30% duty cycle) for a maximum of 3 peaks of 1.5 hours per standard defined operating period. These peak times are usually the morning peak, when many people leave the building, the noon peak during lunch time and the evening peak when people return home.

Service life

The PMC 125 machine is configured for a service life of 15 years with 15,000 operating hours at 120 s/h, or 10 years with 10,000 operating hours at 180 s/h in a continuous mode.

Performance
(starts per hour)



■ Theoretical design operation

⋯ Illustrative example based on a typical traffic pattern with a maximum of 3 peaks per defined operating period, 1.5 hours each

Main specifications for elevators

The following is a brief description of the technical terms frequently used in relation to elevator's machine and the performance of the elevator:



Duty

Also known as usage rate of the elevator. This refers to how much traffic in a building is guided solely through the elevators. The suitable duty requirement for an elevator can be obtained from a traffic calculation that simulates the people flow in the building, and depends on its capacity and daily /yearly usage range.

Alongside to the machine, the performance of some other components - like controller, doors, car or sling - is crucial in defining the recommended scope of application for reliable operation.

Elevator duty is commonly expressed by starts per year and takes account of four main categories:

Low-duty elevators

- Up to 150,000 starts/year
- Usage category 1 and 2, according to ISO 25745-2
- Designed for very low to low usage intensity (about 200 trips per day) and at 1 m/s speed
- Typically found in residential buildings with up to 20 dwellings, small offices or administrative buildings of up to 5 floors, small hotels and car parks

Mid-duty elevators

- Up to 400,000 starts/year
- Usage category 3 and 4, according to ISO 25745-2
- Designed for low to mid usage intensity (about 500 trips per day) and up to 1.6 m/s speed
- Typically found in residential buildings of up to 50 dwellings, medium-sized office or administrative buildings up to 10 floors, medium-sized hotels, shops, small hospitals, universities, etc.

Heavy-duty elevators

- Up to 600,000 starts/year
- Usage category 4 and 5, according to ISO 25745-2
- Designed for mid to high usage intensity (about 1,000 trips per day) and speed up to 2.5 m/s
- Typically found in residential buildings of with more than 50 dwellings, large office or administrative buildings of more than 10 floors, large hotels, shopping centers, metro stations, airports or main train stations, etc.

Extra heavy-duty elevators

- Over 600,000 starts/year
- Usage category 6, according to ISO 25745-2
- Designed for high, very high or extremely high usage intensity (> 1,000 trips per day) and speeds of up to 5.0 m/s
- Typically found in very large office or administrative buildings over 100 m, metro or train stations, that are open 24/7, or when most of the traffic flow passes through the elevators



Starts per hour (s/h)

This term refers to the number of times the elevator machine starts to move the cabin either up or down over a period of one hour. Releveling starts are not considered. Specified as number of s/h: e.g. 120, 180 or 240 s/h. The elevator specifications may require a minimum capability for elevator s/h to ensure robust equipment that is rated to perform during peak building traffic periods and to provide the expected service life and value.



Duty cycle or duty factor

The parameter defining the "run" time duration at rated load for a given period. This is mainly used for the calculation of a machine's heat emission and commonly expressed as a percentage or ratio. For an elevator system, a typical value is 40% "run" time for a one-hour period.



Design service life

The design service life of a product is the time, under defined duty and working conditions (environmental, mechanical and climatic), during which it performs within its specified parameters. Regular maintenance enables the design lifetime to be reached. To eliminate the risk of failures, modernization measures are frequently required when design lifetime is exceeded.



Peak traffic

A regular period of heavy traffic, especially at the beginning or end of a workday.

Please take account of other specific requirements that your project may have in relation to this matter and contact your thyssenkrupp Elevator sales representative for personalized advice.



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